

What is claimed is:

1. A composite golf club shaft formed from a body having multiple fiber reinforced graphite plies, comprising:
  - a) a core formed of one or more filament wound or sheet-rolled fiber reinforced graphite plies;
  - b) at least one sheet-rolled fiber reinforced ply rolled around said core;
  - c) an outer layer formed around said sheet-rolled ply around said core including at least one filament wound ply having metal-coated fibers.
2. The composite golf club shaft of claim 1 wherein said metal-coated fibers in said at least one filament wound ply in said outer layer are coated with a metal chosen from the group consisting of: nickel, titanium, platinum, zinc, copper, brass, tungsten, cobalt, gold and silver.
3. The composite golf club shaft of claim 2 wherein said metal-coated fibers in said at least one filament wound ply in said outer layer are coated with nickel.
4. The composite golf club shaft of claim 2 wherein said metal-coated fibers in said at least one filament wound ply in said outer layer are coated with copper.
5. The composite golf club shaft of claim 2 wherein said core is formed of non-metal-coated fiber plies.

6. The composite golf club shaft of claim 5 wherein said at least one sheet-rolled ply rolled around said core is formed of non-metal-coated fibers.

7. The composite golf club shaft of claim 6 wherein said at least one metal-coated filament wound ply in said outer layer has a metal content between about ten percent and about sixty percent by weight.

8. The composite golf club shaft of claim 7 wherein said at least one metal-coated filament wound ply in said outer layer has a metal content between about twenty percent and about twenty-six percent by weight.

9. The composite golf club shaft of claim 8 wherein said at least one metal-coated filament wound ply in said outer layer is wound at an angle between about five degrees and about twenty-five degrees from the longitudinal axis of the body.

10. A composite golf club shaft formed from a body having multiple fiber reinforced graphite plies, comprising:

- a) a core formed of one or more filament wound or sheet-rolled fiber reinforced plies; and
- b) an outer layer formed around said core including at least one filament wound ply having metal-coated fibers;
- c) wherein said at least one filament wound ply with metal-coated fibers is wound to uniformly add a predetermined amount of weight to said shaft.

11. The golf club shaft of claim 10 wherein said metal is chosen from the group consisting of: nickel, titanium, platinum, zinc, copper, brass, tungsten, cobalt, gold and silver.

12. The golf club shaft of claim 11 wherein at least one ply in said core includes metal coated fibers.

13. The golf club shaft of claim 12 wherein said at least one metal-coated filament wound ply in said outer layer is wound in a diamond pattern.

14. The golf club shaft of claim 11 wherein said metal is vapor deposited on said fiber.

15. The golf club shaft of claim 11 wherein said metal is plated onto said fiber.

16. The golf club shaft of claim 11 wherein said metal is nickel.

17. The golf club shaft of claim 11 wherein said metal is copper.

18. A composite golf club shaft having a grip portion and a hosel portion and formed from multiple fiber reinforced graphite plies, comprising:

a) a core formed of one or more filament wound or sheet-wrapped fiber plies; and,

- b) an outer layer formed around said core including at least one metal-coated filament wound ply;
- c) wherein said at least one metal-coated filament wound ply in said outer layer is wound to non-uniformly concentrate a predetermined amount of weight in a predetermined location on said shaft.

19. The golf club shaft of claim 18 wherein said metal is chosen from the group consisting of: nickel, titanium, platinum, zinc, copper, brass, tungsten, cobalt, gold and silver.

20. The golf club shaft of claim 19 wherein said predetermined amount of weight is concentrated in the grip portion of said shaft.

21. The golf club shaft of claim 19 wherein said predetermined amount of weight is concentrated in the hosel portion of said shaft.

22. A composite golf club shaft having a grip portion and a hosel portion and formed from multiple fiber reinforced graphite plies, comprising:

- a) a core formed of one or more filament wound or sheet-wrapped fiber plies; and,
- b) an outer layer around said core, said outer layer including
- i) a first filament wound portion including filaments coated with a first metal and wound to concentrate a first predetermined amount of weight in a first location on said shaft; and,

- ii) a second filament wound portion including filaments coated with a second metal and wound to concentrate a second predetermined amount of weight in a second location on said shaft;
- c) wherein said first metal is different from said second metal.

23. The golf club shaft of claim 22 wherein said first and second metals are chosen from the group consisting of: nickel, titanium, platinum, zinc, copper, brass, tungsten, cobalt, gold and silver.

24. The golf club shaft of claim 23 wherein said first metal is nickel.

25. The golf club shaft of claim 24 wherein said second metal is copper.

26. The golf club shaft of claim 25 wherein said first location is said grip portion.

27. The golf club shaft of claim 26 wherein said second location is said hosel portion.

add a 2 >

Add B2 >